

Title (en)
CONVERSION OF NATURAL GAS TO LIQUID FORM USING A ROTATION/SEPARATION SYSTEM IN A CHEMICAL REACTOR

Title (de)
UMWANDLUNG VON ERDGAS IN FLÜSSIGER FORM UNTER VERWENDUNG EINES ROTATIONS-/ABSCHEIDUNGSSYSTEMS IN EINEM CHEMISCHEN REAKTOR

Title (fr)
CONVERSION DE GAZ NATUREL EN FORME LIQUIDE À L'AIDE D'UN SYSTÈME ROTATION/SÉPARATION DANS UN RÉACTEUR CHIMIQUE

Publication
EP 3045514 A1 20160720 (EN)

Application
EP 16150478 A 20160107

Priority
US 201514592676 A 20150108

Abstract (en)
A system and method are provided for the separation of hydrogen from natural gas feedstock to form hydrocarbon radicals. Aspects of the system include perpendicular magnetic and electric fields, a method of radical formation that separates hydrogen from the reaction process, and a separation method based on centrifugal forces and phase transitions. The gases rotate in the chamber due to the Lorentz force without any mechanical motion. Rotation separates gases and liquids by centrifugal force. The lighter species are collected from the mid region endpoint of the apparatus and fed back for further reaction. A new concept of controlled turbulence is introduced to mix various species. A novel magnetic field device is introduced comprised of two specially magnetized cylinders. A novel control of temperatures, pressures, electron densities and profiles by, RF, microwaves, UV and rotation frequency are possible especially when atomic, molecular, cyclotron resonances are taken into account. The electrodes can be coated with catalysts; the entire apparatus can be used as a new type of chemical reactor.

IPC 8 full level
C10G 50/00 (2006.01); **B01D 53/24** (2006.01); **B01D 53/32** (2006.01); **B01J 12/00** (2006.01); **B01J 19/08** (2006.01); **B01J 19/12** (2006.01); **C07C 2/80** (2006.01); **H01J 49/32** (2006.01)

CPC (source: CN EP US)
B01J 19/087 (2013.01 - EP US); **B01J 19/088** (2013.01 - EP US); **B01J 19/121** (2013.01 - EP US); **B01J 19/125** (2013.01 - EP US); **B01J 19/126** (2013.01 - EP US); **B01J 19/128** (2013.01 - US); **B01J 19/129** (2013.01 - EP US); **C10G 2/00** (2013.01 - EP US); **C10G 50/00** (2013.01 - EP US); **C10L 3/10** (2013.01 - CN); **H05H 1/46** (2013.01 - US); **B01J 2219/0009** (2013.01 - EP US); **B01J 2219/0803** (2013.01 - EP US); **B01J 2219/0809** (2013.01 - EP US); **B01J 2219/083** (2013.01 - EP US); **B01J 2219/085** (2013.01 - EP US); **B01J 2219/0852** (2013.01 - US); **B01J 2219/0854** (2013.01 - EP US); **B01J 2219/0864** (2013.01 - EP US); **B01J 2219/0869** (2013.01 - EP US); **B01J 2219/0871** (2013.01 - EP US); **B01J 2219/0875** (2013.01 - EP US); **B01J 2219/0883** (2013.01 - US); **C10G 2300/1025** (2013.01 - EP US); **C10G 2300/40** (2013.01 - EP US); **C10G 2400/02** (2013.01 - EP US); **C10G 2400/04** (2013.01 - EP US); **C10G 2400/06** (2013.01 - EP US); **C10G 2400/08** (2013.01 - EP US); **C10L 2290/36** (2013.01 - CN); **C10L 2290/38** (2013.01 - CN); **C10L 2290/40** (2013.01 - CN); **H05H 1/461** (2021.05 - US); **H05H 1/4645** (2021.05 - US)

Citation (search report)

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- [Y] US 2010294666 A1 20101125 - WONG ALFRED Y [US]
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Designated contracting state (EPC)
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EP 3045514 A1 20160720; **EP 3045514 B1 20240306**; CA 2916875 A1 20160708; CA 2916875 C 20210105; CN 105779050 A 20160720; CN 105779050 B 20190528; US 11642645 B2 20230509; US 2018221847 A1 20180809

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EP 16150478 A 20160107; CA 2916875 A 20160107; CN 201610009273 A 20160107; US 201815949351 A 20180410